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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/085,929	02/28/2002	Keith W. Holt	01-975	4364

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EXAMINER	
LAMARRE, GUY J	
ART UNIT	**PAPER NUMBER**
2133	

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/085,929	HOLT, KEITH W.
	Examiner	Art Unit
	Guy J. Lamarre, P.E.	2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *2/28/02* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Pursuant to 35 USC 131, **Claims 1-18** are presented for examination.

Specification

2. The disclosure is objected to because para. 6 recites: 'an all' instead of 'on all,' and algorithm 300 as described in para 23 is not seen in the referred figure. Specification to be amended accordingly. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.1 **Claims 1-18** are rejected under 35 U.S.C. 102(b) as being anticipated by **Iwatani** (US Patent No. 6,023,780).

Iwatani anticipates the claimed invention because disclosed is means to access data for detecting drive errors wherein plural drives are congregated into a single disk configuration with means to generate metadata, means to distribute along with data address/location tagging means via temporal/spatial coordinate means to keep track such data and metadata through plural RAID levels, and means to compare such data and metadata to determine and correct disk anomalies.

Iwatani teaches, in Figs. 1-17 and related description, a disc array apparatus which '*comprises a section generating, when data is stored in the data memory device and first redundancy information is stored in the first redundancy information memory device, relevant data including second redundancy information corresponding to the first redundancy information and to be stored in the second redundancy information memory device. The disc array apparatus of the present invention further comprises a section judging, when the data is read from the plurality of data memory devices, the normality of the data on the basis of the second redundancy information stored in the second redundancy information memory device. In addition, the disc array apparatus of*

the present invention also comprises a restructuring section designating, when the data is judged to be abnormal, only one memory device among a plurality of memory devices as storing the abnormal data, and restructuring (recovering) the data stored in the designated memory device on the basis of the information stored in the remaining memory devices other than the designated memory device.'

As per claim 1, Iwatani discloses the claimed method for detecting drive anomalies in col. 2 lines 25-44, comprising: (a) verifying data is written to a media upon an occurrence of a write operation in col. 1 lines 50-54; (b) performing a data block integrity test by reading data from a single drive (in col. 1 line 55) during an occurrence of a read operation in col. 1 line 55; and (c) performing a location check by reading data from said single drive (in col. 1 lines 63-67) during said occurrence of said read operation in col. 4 line 66, wherein a data persistency verification is not performed during said read operation in col. 2 lines 1-6, 38-44, 67.
As per claim 2, Iwatani discloses the claimed method as claimed in claim 1, wherein said data persistency verification determines whether data is written to said media in col. 2 line 63.
As per claim 3, Iwatani discloses the claimed method as claimed in claim 1, wherein a random read performance is increased by removing the requirement of reading a form of metadata from a second drive in col. 2 line 63 - col. 3 line 3 wherein data is mirrored to thereby avoid the need for reading metadata such as parity information for a 2nd drive.
As per claim 4, Iwatani discloses the claimed method as claimed in claim 1, wherein said data block integrity test ensures that data has been retrieved properly in col. 3 lines 54-65 and Fig. 3: S68.

As per claim 5, Iwatani discloses the claimed method as claimed in claim 1, wherein said location check ensures that data has been retrieved from a correct physical location in col. 3 lines 54-65.

As per claim 6, Iwatani discloses the claimed method for detecting drive anomalies in col. 2

lines 25-44, comprising: (a) verifying data is written to a media upon an occurrence of a write operation in col. 1 lines 50-54; (b) performing a data block integrity test by reading data from a single drive (in col. 1 line 55) during an occurrence of a read operation in col. 1 line 55; said data block integrity test employing a parity error detection algorithm (in col. 10 lines 48-67 wherein parity/CRC comparing means is provided for plural data/metadata matching/discriminating operations);; and (c) performing a location check by reading data from said single drive during said occurrence of said read operation, said location check including the comparison of a location tag with an expected value, wherein a data persistency verification is not performed during said read operation in col. 10 lines 48-67 wherein data striping means, e.g., RAID 2, is provided for partitioning data and parity as metadata and storing same in predetermined address/location range via location tag means to ensure that data access is properly implemented.

As per claim 7, Iwatani discloses the claimed method as claimed in claim 6, wherein said data persistency verification determines whether data is written to said media in col. 2 line 63.

As per claim 8, Iwatani discloses the claimed method as claimed in claim 6, wherein a random read performance is increased by removing the requirement of reading a form of metadata from a second drive in col. 10 lines 48-67 wherein data striping means, e.g., RAID 2, is provided for partitioning data and parity as metadata and storing same in predetermined address/location range via location tag means to ensure that data access is properly implemented.

As per claim 9, Iwatani discloses the claimed method as claimed in claim 6, wherein said data block integrity test ensures that data has been retrieved properly in col. 10 lines 48-67 wherein data striping means, e.g., RAID 2, is provided for partitioning data and parity as metadata and storing same in predetermined address/location range via location tag means to ensure that data access is properly implemented.

As per claim 10, Iwatani discloses the claimed method as claimed in claim 6, wherein said location check ensures that data has been retrieved from a correct physical location in col. 10 lines 48-67 wherein data striping means, e.g., RAID 2, is provided for partitioning data and parity as metadata and storing same in predetermined address/location range via location tag means to ensure that data access is properly implemented.
As per claim 11, Iwatani discloses the claimed method as claimed in claim 6, wherein said parity error detection algorithm is a cyclic redundancy check in col. 10 lines 48-67 wherein parity/CRC comparing means is provided for plural data/metadata matching/discriminating operations.

As per claim 12, Iwatani discloses the claimed method of detecting drive anomalies during a read operation, comprising: (a) reading data from a single drive (in col. 1 line 55) into a cache memory (in col. 13 lines 35-59 wherein storing means is provided for plural distinct data transfer operation in the disk controller); (b) generating a first parity error information set for a data read from said drive in col. 10 lines 48-67; (c) comparing a second parity error information set with said first parity error information set (in col. 10 lines 48-67 wherein parity/CRC comparing means is provided for plural data/metadata matching/discriminating operations); and (d) comparing a location tag with an expected value (in col. 10 lines 48-67 wherein data striping means, e.g., RAID 2, is provided for partitioning data and parity as metadata and storing same in predetermined address/location range via location tag means), wherein a data integrity test and location check is performed by reading data from said single drive(in col. 1 line 55).
As per claim 13, Iwatani discloses the claimed method as claimed in claim 12, wherein data has been retrieved correctly from said single drive when said first parity error information set matches said second parity information set in col. 10 lines 48-67.
As per claim 14, Iwatani discloses the claimed method as claimed in claim 13, wherein said

second parity error information set is stored as metadata in col. 10 lines 48-67. **As per claim 15, Iwatani** discloses the claimed method as claimed in claim 13, wherein said first parity error information set and said second parity error information set are cyclic redundancy check information in col. 10 lines 48-67. **As per claim 16, Iwatani** discloses the claimed method as claimed in claim 12, wherein data has been retrieved from a correct physical location when said location tag matches said expected value in col. 10 lines 48-67 wherein data striping means, e.g., RAID 2, is provided for partitioning data and parity as metadata and storing same in predetermined address/location range via location tag means. **As per claim 17, Iwatani** discloses the claimed method as claimed in claim 16, wherein said location tag provides an indication of an address range associated with a data block in col. 10 lines 48-67 wherein data striping means e.g., RAID 2, is provided for partitioning data and parity as metadata and storing same in address/location range via location tag means. **As per claim 18, Iwatani** discloses the claimed method as claimed in claim 17, wherein a range of said address range is flexible in col. 10 lines 48-67 wherein data striping means e.g., RAID 2, is provided for partitioning data and parity as metadata and storing same in flexible address range.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

4.1 Any response to this action should be mailed to:

Commissioner of Patents and Trademarks, Washington, D.C. 20231

or faxed to: (703) 872-9306 for all formal communications.

Hand-delivered responses should be brought to Customer Services, 220 20th Street S., Crystal Plaza II, Lobby, Room 1B03, Arlington, VA 22202.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guy J. Lamarre, P.E., whose telephone number is (571) 272-3826. The examiner can normally be reached on Monday to Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert De Cady, can be reached at (571) 272-3819.

Information regarding the status of an application may also be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Guy J. Lamarre, P.E
Primary Examiner
10/28/04